

Idaho Falls Subbasin Assessment and Total Maximum Daily Load



Diversion structure at Dry Bed along the South Fork Snake River, DEQ file photo

Final



Department of Environmental Quality

August 25, 2004

Appendix A. Unit Conversion Chart

Table 17. Metric - English unit conversions.

	English Units	Metric Units	To Convert	Example
Distance	Miles (mi)	Kilometers (km)	1 mi = 1.61 km 1 km = 0.62 mi	3 mi = 4.83 km 3 km = 1.86 mi
Length	Inches (in)	Centimeters (cm)	1 in = 2.54 cm 1 cm = 0.39 in	3 in = 7.62 cm 3 cm = 1.18 in
	Feet (ft)	Meters (m)	1 ft = 0.30 m 1 m = 3.28 ft	3 ft = 0.91 m 3 m = 9.84 ft
Area	Acres (ac)	Hectares (ha)	1 ac = 0.40 ha 1 ha = 2.47 ac	3 ac = 1.20 ha 3 ha = 7.41 ac
	Square Feet (ft ²) Square Miles (mi ²)	Square Meters (m ²) Square Kilometers (km ²)	1 ft ² = 0.09 m ² 1 m ² = 10.76 ft ² 1 mi ² = 2.59 km ² 1 km ² = 0.39 mi ²	3 ft ² = 0.28 m ² 3 m ² = 32.29 ft ² 3 mi ² = 7.77 km ² 3 km ² = 1.16 mi ²
Volume	Gallons (g)	Liters (L)	1 g = 3.78 l 1 l = 0.26 g	3 g = 11.35 l 3 l = 0.79 g
	Cubic Feet (ft ³)	Cubic Meters (m ³)	1 ft ³ = 0.03 m ³ 1 m ³ = 35.32 ft ³	3 ft ³ = 0.09 m ³ 3 m ³ = 105.94 ft ³
Flow Rate	Cubic Feet per Second (ft ³ /sec) ¹	Cubic Meters per Second (m ³ /sec)	1 ft ³ /sec = 0.03 m ³ /sec 1 m ³ /sec = ft ³ /sec	3 ft ³ /sec = 0.09 m ³ /sec 3 m ³ /sec = 105.94 ft ³ /sec
Concentration	Parts per Million (ppm)	Milligrams per Liter (mg/L)	1 ppm = 1 mg/L ²	3 ppm = 3 mg/L
Weight	Pounds (lbs)	Kilograms (kg)	1 lb = 0.45 kg 1 kg = 2.20 lbs	3 lb = 1.36 kg 3 kg = 6.61 kg
	Fahrenheit (°F)	Celsius (°C)	°C = 0.55 (F - 32) °F = (C x 1.8) + 32	3 °F = -15.95 °C 3 °C = 37.4 °F

¹ 1 ft³/sec = 0.65 million gallons per day; 1 million gallons per day is equal to 1.55 ft³/sec.

²The ratio of 1 ppm = 1 mg/L is approximate and is only accurate for water.

Appendix B. State and Site-Specific Standards and Criteria

IDAPA 58.01.02. 200.08

“Sediment shall not exceed quantities specified in sections 250 and 252, or, in the absence of specific sediment criteria, quantities which impair designated beneficial uses. Determination of impairment shall be based on water quality monitoring and surveillance and the information utilized in section 350.02.b.”

IDAPA 58.01.02.250.02.e.

“Turbidity, below any applicable mixing zone set by the Department, shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days.”

IDAPA 58.01.02.250.f.i.(1)

“Intergravel Dissolved Oxygen.

(a) One (1) day minimum of not less than five point zero (5.0) mg/l.

(b) Seven (7) day average mean of not less than six point zero (6.0) mg/l.”

Quantities specified in Section 250 refer to turbidity criteria identified for cold water biota use and small public domestic water supplies. Turbidity must be measured upstream and downstream from a sediment input in order to determine violation of criteria. Indirectly, specific sediment criteria also include intergravel dissolved oxygen measures for salmonid spawning uses. Intergravels filled with sediment cannot hold enough dissolved oxygen for successful incubation. Intergravel dissolved oxygen measurement requires the placement of special apparatus in spawning gravels. Turbidity and intergravel DO are rarely measured as part of routine reconnaissance-level monitoring and assessment. These measurements are usually conducted in special cases during higher-level investigations of potential problems.

Appendix C. BLM Assessments in the Subbasin

The Bureau of Land Management (BLM) has conducted Riparian and Wetland Research Program (RWRP) Lotic Health Assessment for Large River Systems surveys (see <http://rwrp60.rwrp.unt.edu/Lasso/action>) on several sections of the Snake River in this subbasin. Below are comments and Proper Functioning Condition ratings from these surveys.

Record ID Number 9800143 (T5N, R38E, Section 22)

Comments: “This polygon starts at the confluence of the Henry’s Fork and the South Fork, goes downstream to the Menan Bridge, and includes public land on both banks and islands. Past cottonwood clear cutting and other riparian vegetation removal, pasture development, unauthorized livestock grazing and supplemental feed, and the Menan boat ramp have reduced riparian vegetation, increased bare ground, increased non-native forbs, grasses, and noxious weeds, and impacted river banks. The flood control levee limits natural river dynamics on public land for about one-half mile above the Menan Bridge.”

Vegetation Rating: 72% - Functional at Risk (Healthy, but with problems)

Soils/Hydrology: 58% - Nonfunctional (Unhealthy)

Total Rating: 64% - Functional at Risk (Healthy, but with problems)

Record ID Number 9800144 (T5N, R38E, Section 17)

Comments: “This polygon starts at the Menan Bridge, goes to the downstream end of Kellers Island, and includes public land on both banks and islands. The riparian vegetation is degraded in several areas due to unauthorized livestock grazing and supplemental feeding. One area has been cleared. One area has many roads and dispersed camping areas, which are eliminating some riparian vegetation. Noxious weed invasion is widespread and dominates the understory in areas. ATV activity on new gravel bar is eliminating cottonwood seedlings in areas. This polygon was severely impacted by the 1976 Teton Dam Flood, as well as the 1997 flood.”

Vegetation Rating: 69% - Functional at Risk (Healthy, but with problems)

Soils/Hydrology: 60% - Functional at Risk (Healthy, but with problems)

Total Rating: 64% - Functional at Risk (Healthy, but with problems)

Record ID Number: 9800145 (T5N, R37E, Section 13)

Comments: “This polygon starts at the downstream end of Kellers Island, goes downstream to the section 14/23 line, and includes public land on both banks and islands. This polygon contains the Deer Park bald eagle winter roost. The riparian vegetation is degraded in several areas due to unauthorized livestock grazing and supplemental feeding. Noxious weed invasion is widespread and dominates the understory in areas.

This polygon was severely impacted by the 1976 Teton Dam Flood as well as the 1997 flood.”

Vegetation Rating: 67% - Functional at Risk (Healthy, but with problems)

Soils/Hydrology: 60% - Functional at Risk (Healthy, but with problems)

Total Rating: 63% - Functional at Risk (Healthy, but with problems)

Record ID Number: 9800146 (T5N, R37E, Section 28)

Comments: “This polygon starts at the section 14/23 line, goes downstream to the Roberts Bridge, and includes public land on both banks and islands. This polygon contains one bald eagle nesting territory. Some areas have been cleared of riparian vegetation and overgrazed. These areas are completely infested with noxious weeds. The river in this polygon is one main channel with little bar development. Banks are unconsolidated sands and are highly erodable. This polygon contains the Point Allotment 04390.”

Vegetation Rating: 36% - Nonfunctional (Unhealthy)

Soils/Hydrology: 53% - Nonfunctional (Unhealthy)

Total Rating: 46% - Nonfunctional (Unhealthy)

Record ID Number: 9800147 (T5N, R37E, Section 15)

Comments: “This polygon starts at the Roberts Bridge, goes downstream to the confluence with the Butte Market Lake Canal, and includes public land on both banks and islands. The river in this polygon forms one wide, deep channel with eroding sand banks. Even though some banks are armored with willow, the land adjacent to the banks has lots of thistle and knapweed. Public lands in this polygon have a long history of unauthorized grazing, supplemental feeding, and vegetation clearing. Noxious weed infestation is severe throughout the polygon.”

Vegetation Rating: 31% - Nonfunctional (Unhealthy)

Soils/Hydrology: 42% - Nonfunctional (Unhealthy)

Total Rating: 37% - Nonfunctional (Unhealthy)

In addition to the Large River Systems, BLM has completed RWRP Lotic Inventory Forms for several smaller streams in the subbasin (Table 11). None of these streams are 303d listed.

Table 11. Proper Functioning Condition (Health) Assessments for selected streams in the Idaho Falls Subbasin.

Name	Record ID	Scores*		
Cress Creek	9800111 (T4N,R40E, Section 23)	Vegetation	83%	PFC
		Soil/Hydrology	67%	FAR
		Total	73%	FAR
Kelly (Canyon) Creek	9800109 (T4N,R41E, Section 32)	Vegetation	63%	FAR
		Soil/Hydrology	24%	NF
		Total	38%	NF
Kelly (Canyon) Creek	9800108 (T4N,R41E, Section 32)	Vegetation	75%	FAR
		Soil/Hydrology	62%	FAR
		Total	67%	FAR
Kelly (Canyon) Creek	9800107 (T4N,R41E, Section 32)	Vegetation	79%	FAR
		Soil/Hydrology	52%	NF
		Total	62%	FAR
Little Kelly Creek	9800106 (T4N,R41E, Section 29)	Vegetation	79%	FAR
		Soil/Hydrology	52%	NF
		Total	62%	FAR
Little Kelly Creek	9800105 (T4N,R41E, Section 29)	Vegetation	75%	FAR
		Soil/Hydrology	52%	NF
		Total	61%	FAR
Henry Creek	9600034 (T1S,R39E, Section 4)	Vegetation	63%	FAR
		Soil/Hydrology	76%	FAR
		Total	71%	FAR
Henry Creek	9600033 (T1S,R39E, Section 4)	Vegetation	71%	FAR
		Soil/Hydrology	43%	NF
		Total	53%	NF
Dry Fork of Henry Creek	9600032 (T1S,R39E, Section 7)	Vegetation	83%	PFC
		Soil/Hydrology	52%	NF
		Total	64%	FAR
Dry Fork of Henry Creek	9600031 (T1S,R39E, Section 7)	Vegetation	76%	FAR
		Soil/Hydrology	100%	PFC
		Total	81%	PFC
Dry Fork of Henry Creek	9600030 (T1S,R39E, Section 20)	Vegetation	88%	PFC
		Soil/Hydrology	71%	FAR
		Total	77%	FAR

*PFC = Proper Functioning Condition (Healthy)

FAR = Functioning At Risk (Healthy, but with Problems)

NF = Nonfunctional (Unhealthy)

Appendix D. Photographs

Photo B-1. Birch Creek watershed above main road. T3N, R41E, section 34



Photo B-2. Birch Creek downstream view from Photo #1.



Photo B-3. Birch Creek downstream view near beginning of dryland farming.



Photo B-4. Birch Creek downstream view upper dryland farming area.



Photo B-5. Birch Creek streambed at road crossing (T3N, R41E, section 32).



Photo B-6. Birch Creek downstream view in dryland farming area.



Photo B-7. Birch Creek in dryland farming area evidence of bank sloughing.



Photo B-8. Birch Creek channel view in dryland farming area.



Photo B-9. Birch Creek evidence of bank sloughing in dryland farming area.



Photo B-10. Birch Creek upstream view lower section near Highway 26 (T3N, R40E, section 11).



Photographs of Willow Creek – July 2001

Photo C-1. Willow Creek canal upstream view of confluence of Ririe Reservoir flow (right) and Eagle Rock Canal (left) (T3N, R40E, section 7).



Photo C-2. Willow Creek Canal downstream view from Photo #1.



Photo C-3. Willow Creek Canal upstream view above Sand Creek Canal diversion (T3N, R39E, section 21).



Photo C-4. Floodway downstream view below diversion from Willow Creek Canal.



Photo C-5. Willow Creek Canal below floodway diversion.



Photo C-6. Willow Creek Canal downstream view above North Fork-South Fork split.



Photo C-7. North Fork Willow Creek Canal downstream view (T3N, R38E, section 33).



Photo C-8. South Fork Willow Creek Canal near Photo #7.



Photo C-9. North Fork Willow Creek Canal (dry) in Russ Freeman Park near confluence with the Snake River.



Photo C-10. South Fork Willow Creek Canal (dry) in the City of Idaho Falls near confluence with the Snake River.



Photographs of South Fork Snake River Diversions – July 2001

Photo D-1. South Fork Snake River above Eagle Rock Canal diversion.

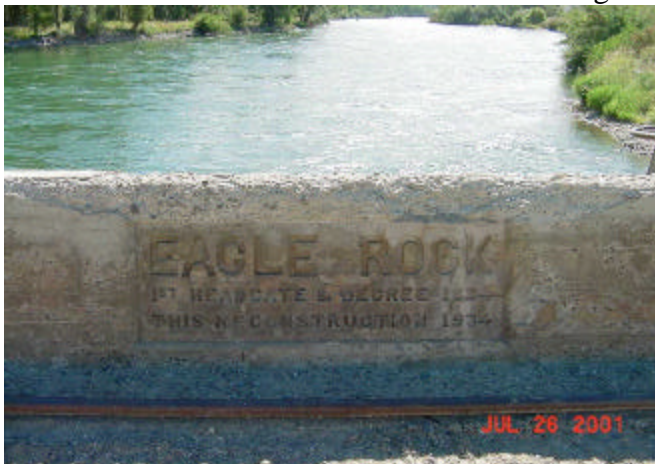


Photo D-2. South Fork Snake River downstream view below Eagle Rock Canal diversion.



Photo D-3. South Fork Snake River at Dry Bed diversion.



Appendix E. BURP Assessments

Table E-1. Macroinvertebrate Indices for BURP Sites in the Idaho Falls Subbasin.

BURPID	STREAM	ECOREGION	DATE SAMPLING	HUC	Total Abundance	Taxa Richness	% Domce Top Taxa	% Domnce Top 3
1994SIDFA011	BIRCH CREEK	SRB/HD	07/05/1994	17040201	953	26	27.18	67.16
1994SIDFA012	BIRCH (L)	SRB/HD	07/05/1994	17040201	311	17	71.7	84.24
1996SIDFZ035	KELLY CANYON CREEK	MIDDLE ROCKIES	06/20/1996	17040201	557	27	25.67	53.32
1997SIDFM009	KELLY CANYON CREEK	MIDDLE ROCKIES	06/16/1997 8:48	17040201	59	10	40.68	74.58
BURPID	STREAM	% Scrapers	% EPT	Sum EPT Taxa	HBI	H'	% Ephem	% Plec
1994SIDFA011	BIRCH CREEK	18.05	23.82	11	3.95	0.89	19.31	0.42
1994SIDFA012	BIRCH (L)	7.07	4.82	2	4.99	0.53	2.25	0
1996SIDFZ035	KELLY CANYON CREEK	57.81	54.4	11	3.58	1.04	32.68	12.39
1997SIDFM009	KELLY CANYON CREEK	49.15	55.93	4	4.71	0.75	49.15	0
BURPID	STREAM	Count Ephem Taxa	Count Plec Taxa	Count Trich Taxa	Sum Obligate CWB	% Obligate CWB	# Clinger Taxa	# Long Lived Taxa
1994SIDFA011	BIRCH CREEK	3	3	5	1	0.31	8	4
1994SIDFA012	BIRCH (L)	1	0	1	0	0	3	3
1996SIDFZ035	KELLY CANYON CREEK	3	2	6	0	0	14	10
1997SIDFM009	KELLY CANYON CREEK	2	0	2	0	0	2	3
BURPID	STREAM	% Clingers	% Long Lived	# Elmidae Taxa	# Predator Taxa	% Elmidae	% Predator	# Scrapers Taxa
1994SIDFA011	BIRCH CREEK	7.03	17.84	2	6	23.5	5.04	3
1994SIDFA012	BIRCH (L)	6.75	5.79	2	3	4.18	2.25	4
1996SIDFZ035	KELLY CANYON CREEK	53.5	58.53	6	5	25.31	13.29	7
1997SIDFM009	KELLY CANYON CREEK	13.56	45.76	0	3	0	10.17	2
BURPID	STREAM	MBI	SMI	Draft Temp Index				
1994SIDFA011	BIRCH CREEK	3.73	47.19	4.94				
1994SIDFA012	BIRCH (L)	1.98	26.24	4				
1996SIDFZ035	KELLY CANYON CREEK	4.84	57.91	5.13				
1997SIDFM009	KELLY CANYON CREEK	3.55	20.7	5.29				

Table E-2. Habitat Indices for BURP Sites in the Idaho Falls Subbasin.

BURPID	STREAM	ECOREGION	DATESAMPLING	HUC	TYPE HAB	POOL SUB	STREAM CO	EM BED	
1994SIDFA011	BIRCH CREEK	SRB/HD	12:00:00 AM	17040201	R	0	4	3	
1994SIDFA012	BIRCH (L)	SRB/HD	12:00:00 AM	17040201	R	0	5	1	
1996SIDFZ035	KELLY CANYON CREEK	MIDDLE ROCKIES	12:00:00 AM	17040201	R	0	7	2	
1997SIDFM009	KELLY CANYON CREEK	MIDDLE ROCKIES	12:00:00 AM	17040201	R	0	8	6	
BURPID	STREAM	POOL VAR	DIS PRES	ZONE INFL	% FINES	VELDEP SCORE	POOLRIFFLE SCORE	WDRATIO SCORE	BANKCOVER SCORE
1994SIDFA011	BIRCH CREEK	0	3	2	3	15	3	15	6
1994SIDFA012	BIRCH (L)	0	7	4	10	5	0	15	5
1996SIDFZ035	KELLY CANYON CREEK	0	4	3	10	9	0	15	5
1997SIDFM009	KELLY CANYON CREEK	0	9	7	7	15	4	12	3
BURPID	STREAM	BANKSTAB SCORE	CANOPY SCORE	SINU SCORE	C SHAPE	Total HAB Score	Wolman	LOD	SHI
1994SIDFA011	BIRCH CREEK	6	0	10	2	69	6	10	39
1994SIDFA012	BIRCH (L)	0	7	0	2	60	0	10	51
1996SIDFZ035	KELLY CANYON CREEK	7	9	10	3	76	0	5	48
1997SIDFM009	KELLY CANYON CREEK	2	10	2	6	94	5	4	65

Table E-3. Stream Characteristics of BURP Sites in the Idaho Falls Subbasin.

BURPID	Stream Name	Map Elevation	Stream Gradient	Rosgen Code	Stream Order	Sinuosity	Left Bank %Stable	Covered %Unstable	Left Bank %Stable	Uncovered %Unstable	Right Bank %Stable	Covered %Unstable	Right Bank %Stable	Uncovered %Unstable
1994SIDFA011	BIRCH CREEK	1883.6	0.04		2	Moderate	80	10	10	0	60	10	0	30
1994SIDFA012	BIRCH (L)	1621	4				5	70	5	20	5	75	5	15
1996SIDFZ035	KELLY CANYON CREEK	1584	4	B	1	Moderate	77	0	5	18	70	0	6	24
1997SIDFM009	KELLY CANYON CREEK	1624.5	4.5	A	2	Low	40	34	11	15	24	17	14	45

Appendix F. Distribution List

All state and federal resource agencies were notified of online posting of TMDL. Additionally, hard copies were provided to the South Fork Snake River Watershed Advisory Group and the Idaho Falls Public Library. The public was notified through published public notice.

Appendix G. Public Comments

A public comment period, published in local newspapers and on DEQ's website, was conducted from June 28, 2004 to August 9, 2004. Public meetings were held on June 24, 2004 in front of the South Fork Snake River Watershed Advisory Group, and on July 8, 2004 at the DEQ Regional Office building in Idaho Falls. The Document was available online at DEQ's website, at the DEQ regional office in Idaho Falls, and at the Idaho Falls Public Library. Comments were received from US EPA on August 5, 2004. Those comments are available for review at the DEQ Idaho Falls Regional Office during normal business hours. No other comments were received on the proposal.

